

## CLAIMS

1. A data cleaning program to be contained in a data processing device having a data recording medium and a controller for access control over the  
5 data recording medium,

wherein the data recording medium is controlled by the controller by being divided into a data area and a FAT area,

10 the data area having a plurality of clusters in which file data is to be recorded and being adapted to have the file data recorded in one cluster or distributedly among a plurality of clusters,

the FAT area having a plurality of recording areas with addresses specifying the clusters,

15 each of the recording areas being adapted to have one selected from the following and recorded therein: (a) an address of a cluster in a cluster chain in which data contiguous to a file data recorded in a cluster corresponding to the recording area is recorded and (b) a release code, and

20 the program being adapted to refer to the FAT area to extract addresses of all recording areas in which the release codes are recorded, so as to sequentially overwrite clusters corresponding to the extracted addresses with predetermined data.

2. A data cleaning program to be contained in a data processing device having a data recording medium and a controller for access control over the data recording medium,

25 wherein the data recording medium is controlled by the controller by being divided into a data area and a FAT area,

the data area having a plurality of clusters in which file data is to be

recorded and being adapted to have the file data recorded in one cluster or distributedly among a plurality of clusters,

the FAT area having a plurality of recording areas with addresses specifying the cluster,

5 each of the recording areas being adapted to have one selected from the following and recorded therein: (a) an address of a cluster in a cluster chain in which data contiguous to a file data recorded in a cluster corresponding to the recording area is recorded and (b) a release code,

the data area further containing a particular software,

10 wherein the particular software is adapted to reserve a part of the data area as a software management area, and in storing of a created file, to record updated data of the file in the data area with separating from previous data and to record FAT data indicating the clusters in which the updated data and all the previous data relating to the file are recorded in the software management area as well, and

15 the program being adapted to specify a file created by the particular software to extract addresses of all clusters in which data relating to the file is recorded in reference to the FAT data recorded in the software management area and to extract addresses of all recording areas in which the release codes  
20 are recorded in reference to the FAT area, so as to sequentially perform overwriting operations in each of which predetermined data is written over clusters with addresses corresponding to logical product of the both extracted addresses.

25 3. The data cleaning program as defined in claim 2,

being adapted to write the predetermined data over FAT data corresponding to the clusters on which the overwriting operation is

performed among the FAT data recorded in the software management area.

4. A data cleaning program provided with operating functions of both the

data cleaning program as defined in claim 1 and the data cleaning program as

5 defined in claim 2 or 3,

being adapted to selectively execute either one of the programs by the controller.

5. The data cleaning program as defined in one of claims 1 to 4,

10 being adapted to perform the overwriting operation by repeating a

predetermined number of writing of same data or various data over the clusters.

6. The data cleaning program as defined in one of claims 1 to 5,

15 wherein the data recording medium is a hard disk.

7. The data cleaning program as defined in one of claims 1 to 6,

being adapted to automatically run to start cleaning operation by the controller either at a predetermined time or on condition that another

20 operation has not been continuously performed for a predetermined period of time.

8. A data cleaning program to be contained in a data processing device

having a data recording medium and a controller for access control over the

25 data recording medium by an operating system,

the program being adapted to operate on the operating system,

the program and the system being contained in the data recording

medium, and

the program being adapted to save by the controller at least one selected from a part of files of the operating system required for cleaning operation and the data cleaning program itself into a main memory when a 5 file contained in the data recording medium is specified, depending on the specified file,

so as to perform overwriting operation whereby predetermined data is sequentially written over a corresponding recording area in which the specified data is contained in the data recording medium according to the 10 data cleaning program in either the data recording medium or the main memory in reference to the operating system in either the data recording medium or the main memory, and

so as to perform deletion operation whereby the overwritten file is deleted from the management of the operating system when the operating 15 system is not included in the specified file.

9. The data cleaning program as defined in claim 8,

being adapted to specify all files contained in the data recording medium, and

20 being adapted to save by the controller a part of files of the operating system required for cleaning operation and the data cleaning program itself in the main memory when all the files are specified,

so as to perform the overwriting operation according to the data 25 cleaning program saved in the main memory in reference to the operating system saved in the main memory.

10. The data cleaning program as defined in claim 9,

wherein the controller is adapted to unprotect files constituting the operating system.

11. The data cleaning program as defined in one of claims 8 to 10,

5 being adapted to specify, except the operating system among the files contained in the data recording medium, one file selected from (a) the data cleaning program and (b) the data cleaning program and other software and/or data, and

10 being adapted to save by the controller the data cleaning program itself in the main memory when the corresponding file is specified, so as to perform the overwriting operation according to the data cleaning program saved in the main memory in reference to the operating system contained in the medium.

15 12. The data cleaning program as defined in one of claims 8 to 11,

being adapted to specify, except the operating system and the data cleaning program among the files contained in the data recording medium, at least one file selected from the other software and the data, and

20 being adapted to perform the overwriting operation by the controller according to the data cleaning program contained in the medium in reference to the operating system contained in the medium when the corresponding file is specified.

13. The data cleaning program as defined in one of claims 8 to 12,

25 wherein the data recording medium comprises a hidden area managed by the operating system or a BIOS,

the hidden area having an installing function of the operating system

and being protected from being overwritten by the data cleaning program.

14. The data cleaning program as defined in one of claims 8 to 13,  
being adapted to perform the overwriting operation by repeating a  
5 predetermined number of writing of same data or various data over the  
clusters.
15. The data cleaning program as defined in one of claims 8 to 14,  
wherein the data recording medium is a hard disk.

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16. A data cleaning program to be contained in a data processing device,  
wherein the data processing device comprises a data recording medium  
and a controller for access control over the data recording medium,  
wherein the data recording medium is controlled by the controller by  
15 being divided into a data area and a FAT area,  
the data area having a plurality of clusters in which file data is to be  
recorded and being adapted to have the file data recorded in one cluster or  
distributedly among a plurality of clusters,  
the FAT area having a plurality of recording areas with addresses  
20 specifying the clusters,  
each of the recording areas being adapted to have one selected from the  
following and recorded therein: (a) an address of a cluster in a cluster chain  
in which data contiguous to a file data recorded in a cluster corresponding to  
the recording area is recorded and (b) a release code, and  
25 the program being adapted to refer to the FAT area to extract addresses  
of all recording areas in which the release codes are recorded, so as to  
overwrite clusters corresponding to the extracted addresses with desired

dummy data.

17. A data cleaning program to be contained in a data processing device, wherein the data processing device comprises a data recording medium  
5 and a controller for access control over the data recording medium, wherein the data recording medium is controlled by the controller by being divided into a data area and a FAT area, the data area having a plurality of clusters in which file data is to be recorded and being adapted to have the file data recorded in one cluster or  
10 distributedly among a plurality of clusters, the FAT area having a plurality of recording areas with addresses specifying the clusters, each of the recording areas being adapted to have one selected from the following and recorded therein: (a) an address of a cluster in a cluster chain in which data contiguous to a file data recorded in a cluster  
15 corresponding to the recording area is recorded and (b) a release code, the data area further containing a particular software, wherein the particular software is adapted to reserve a part of the data area as a software management area, and in storing of a created file, to record the most updated data of the file in the data area with separating from  
20 previous data and to record FAT data indicating the clusters in which the most updated data and all the previous data relating to the file are recorded in the software management area as well, and the program being adapted to specify file data created by the particular software to extract addresses of all clusters in which data relating to the file is  
25 recorded in reference to the FAT data recorded in the software management area and to extract addresses of all recording areas in which the release codes are recorded in reference to the FAT area, so as to perform an overwriting

operation in which desired dummy data is written over clusters with addresses corresponding to logical product of the both extracted addresses.

18. A data cleaning program to be contained in a data processing device,

5       wherein the data processing device comprises a data recording medium and a controller for access control over the data recording medium by an operating system,

the program being adapted to operate on the operating system,

10      the program and the system being contained in the data recording medium, and

the program being adapted to save at least one selected from a part of files of the operating system required for data cleaning operation and the data cleaning program into a main memory when a file contained in the data recording medium is specified to be cleaned so as to prevent the data processing device from stopping during the data cleaning operation,

15      so that the data cleaning operation is performed by one selected from the part of files of the operating system required for the cleaning operation and the data cleaning program saved in the main memory.